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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,170	12/12/2001	Samuel Naffziger	10016887-1	1391

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EXAMINER

BONZO, BRYCE P

ART UNIT PAPER NUMBER

2114

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/021,170

Applicant(s)

NAFFZIGER ET AL.

Examiner

Bryce P. Bonzo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

NON-FINAL OFFICIAL ACTION

Status of the Claims

Claims 1-19 are rejected under 35 USC §103.

Rejections under 35 USC §103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moh (United States Patent No. 5,790,530) in view of Fischer (United States Patent No. 5,371,734).

Claims 1-4, 6, 8, 10-12, 14-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Moh (United States Patent No. 5,790,530).

As per claims 1-19, Moh discloses:

1. A method of providing error detection and correction of transmission of data units between a sending and a receiving agent connected together in a network or computer interconnect environment, the data units having a

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predetermined size, a control portion and an information portion, the method comprising:

the sending agent inserting an expected sequence identifier in each data unit (column 6, lines 64-65);

the receiving agent examining the sequence identifiers of the data units to determine the sequence of data units being received (column 7, lines 41-44: Moh discloses detecting a sequence out of order error, which must be determined by the comparison of sequence numbers); and,

the receiving agent initiating a communication with the sending agent if the receiving agent determines that a received data unit has an incorrect sequence identifier (column 12, lines 11-14; column 11, lines 51-60).

Moh does not disclose:

a resend data unit communication (as taught by Fischer at column 22, line 56 through column 23, line 11 and column 23, lines 31-65).

Fischer provides a low level data transfer protocol (MAC) system which parallels many widely used data transport systems (including Moh). Fischer discloses the enhancement of these protocols by use of requesting resends of packets as a result of an invalid sequence identifier. Fischer fully expects his MAC protocol to be implemented in many other protocols (column 5, lines 14-19). Fischer specifically states that the use of the resending of data is a needed improvement of the prior art, and is not merely an incidental feature of his

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invention (column 6, lines 51-62). Moh clearly disclose the malleability of his invention to provide the basis of alternate implementations (column 4, lines 15-25: this passage describes the basic framework as providing a starting point for further modification). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the resend data unit communication of Fischer into the inter-processor communication system of Moh, thereby providing an extra layer of protection in processor communication.

2. A method as defined in claim 1 wherein said predetermined size is within the range of about 64 to about 256 bits (Moh: column 5, line 44: discloses a 64 bit long control message).

3. A method as defined in claim 2 wherein said predetermined size is about 128 bits (Moh: column 9, lines 63-64 disclose the incrementing of message size by 64's. $64+64$ resulting in a 128 bit message).

4. A method as defined in claim 1 wherein said sequence identifier is a number that is changed in a predictable manner for each successive unit (inherent, if the sequence numbers are not structured in a predetermined method, then the sequence numbers have no meaning, that is they do not represent a sequence).

5. A method as defined in claim 1 wherein said number incremented by a known value for each successive unit (Fischer column 22, lines 56- 65)

6. A method as defined in claim 1 wherein said sequence identifier is inserted in the control portion of the data unit (Moh: column 6, lines 58-65).

7. Moh discloses:

retaining a replica of each data unit for a period of time necessary for said examining step to determine that the sequence identifier for a transmitted data unit is correct (column 6, lines 6-14: if the packet is retransmitted as shown by the flow chart and specification of Moh, the only place it could have been reproduced from is the buffer which sent it).

Moh does not explicitly disclose:

discarding said replica when said sequence identifier for the transmitted data unit is correct.

Official Notice is given that is ubiquitously well known to empty unneeded data from a buffer in data transmission arts. Buffers, particularly those in the micro-architectures of microprocessors and I/O controllers, have a finite buffer size, which must be utilized very carefully. Thus when data is no longer needed it is removed from the buffer to allow the transit of more data that needs to be moved. The data at the sender having been successfully transferred to receiver,

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is a clear case of data no longer needing to be stored at the sender's buffer. Thus it would have been obvious to one of ordinary skill in the art at the time of invention to discard the replica once transmission has been completed successfully, allowing the buffer space to be used by more data awaiting transmission, thereby making the fullest use possible of the limited buffer size in the sender.

8. A method of providing error detection and correction of transmission of data packets comprising at least two flits between sending and receiving agents connected together in a network or computer interconnect environment, the flits being of a predetermined size and having a control portion and an information portion, the method comprising:

the sending agent embedding a sequence identifier in each flit prior to transmission by a sending agent (column 6, lines 64-65);

the sending agent sending each flit to a connected receiving agent (abstract);

the receiving agent examining the sequence identifiers of each flit to determine the sequence of flits being received (column 7, lines 41-44: Moh discloses detecting a sequence out of order error, which must be determined by the comparison of sequence numbers); and,

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the receiving agent initiating a resend data unit communication with the send agent if the receiving agent determines that a received flit has an incorrect sequence identifier (column 12, lines 11-14; column 11, lines 51-60).

Moh does not disclose:

a resend data unit communication (as taught by Fischer at column 22, line 56 through column 23, line 11 and column 23, lines 31-65).

Fischer provides a low level data transfer protocol (MAC) system which parallels many widely used data transport systems (including Moh). Fischer discloses the enhancement of these protocols by use of requesting resends of packets as a result of an invalid sequence identifier. Fischer fully expects his MAC protocol to be implemented in many other protocols (column 5, lines 14-19). Fischer specifically states that the use of the resending of data is a needed improvement of the prior art, and is not merely an incidental feature of his invention (column 6, lines 51-62). Moh clearly disclose the malleability of his invention to provide the basis of alternate implementations (column 4, lines 15-25: this passage describes the basic framework as providing a starting point for further modification). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the resend data unit communication of Fischer into the inter-processor communication system of Moh, thereby providing an extra layer of protection in processor communication.

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9. Moh discloses:

retaining a replica of each data unit for a period of time necessary for said examining step to determine that the sequence identifier for a transmitted data unit is correct (column 6, lines 6-14: if the packet is retransmitted as shown by the flow chart and specification of Moh, the only place it could have been reproduced from is the buffer which sent it).

Moh does not explicitly disclose:

discarding said replica when said sequence identifier for the transmitted data unit is correct.

Official Notice is given that is ubiquitously well known to empty unneeded data from a buffer in data transmission arts. Buffers, particularly those in the micro-architectures of microprocessors and I/O controllers, have a finite buffer size, which must be utilized very carefully. Thus when data is no longer needed it is removed from the buffer to allow the transit of more data that needs to be moved. The data at the sender having been successfully transferred to receiver, is a clear case of data no longer needing to be stored at the sender's buffer. Thus it would have been obvious to one of ordinary skill in the art at the time of invention to discard the replica once transmission has been completed successfully, allowing the buffer space to be used by more data awaiting transmission, thereby making the fullest use possible of the limited buffer size in the sender.

10. A method as defined in claim 8 wherein said predetermined size is within the range of about 64 to about 256 bits (Moh: column 5, line 44: discloses a 64 bit long control message).

11. A method as defined in claim 10 wherein said predetermined size is about 128 bits (Moh: column 9, lines 63-64 disclose the incrementing of message size by 64's. $64+64$ resulting in a 128 bit message).

12. A method as defined in claim 8 wherein said sequence identifier is a number that is changed in a predictable manner for each successive unit (inherent, if the sequence numbers are not structured in a predetermined method, then the sequence numbers have no meaning, that is they do not represent a sequence).

13. A method as defined in claim 1 wherein said number is incremented by a known value for each successive unit (Fischer column 22, lines 56- 65).

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14. A method for providing error detection and correction of transmission of data units between sending and receiving agents connected in a network or computer interconnect environment, the data units being of a predetermined size and having a control portion and an information portion, the method comprising:

the sending agent inserting a sequence identifier in each data unit (column 6, lines 64-65);

the sending agent sending the data unit to the receiving unit (Abstract);

the sending agent retaining a replica of the data unit in a memory (column 6, lines 6-14);

the receiving agent examining the sequence identifiers of each data unit to determine the sequence of data units being received by the receiving agent (column 7, lines 41-44);

the receiving agent initiating a resend data unit communication with the sending agent if it is determined that a received data unit has an incorrect sequence identifier (column 12, lines 11-14; column 11, lines 51-60).

Moh does not disclose:

a resend data unit communication (as taught by Fischer at column 22, line 56 through column 23, line 11 and column 23, lines 31-65).

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Fischer provides a low level data transfer protocol (MAC) system which parallels many widely used data transport systems (including Moh). Fischer discloses the enhancement of these protocols by use of requesting resends of packets as a result of an invalid sequence identifier. Fischer fully expects his MAC protocol to be implemented in many other protocols (column 5, lines 14-19). Fischer specifically states that the use of the resending of data is a needed improvement of the prior art, and is not merely an incidental feature of his invention (column 6, lines 51-62). Moh clearly disclose the malleability of his invention to provide the basis of alternate implementations (column 4, lines 15-25: this passage describes the basic framework as providing a starting point for further modification). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the resend data unit communication of Fischer into the inter-processor communication system of Moh, thereby providing an extra layer of protection in processor communication.

15. A method as defined in claim 14 wherein said sequence identifier is inserted in the control portion of the data unit (column 6, lines 64-65).

16. A method as defined in claim 14 wherein said predetermined size is about 128 bits (column 9, lines 63-94).

Claims 17-19 are the system for providing error detection and correction using the method of previously rejected claims 14-16 and are rejected on the same grounds recited above.

Response to Applicant's Arguments

New grounds have been provided in response to Applicant's amendments.

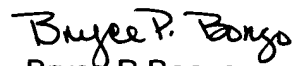
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bryce P. Bonzo whose telephone number is (571)272-3655. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on (571)272-3645. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Bryce P Bonzo
Primary Examiner
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